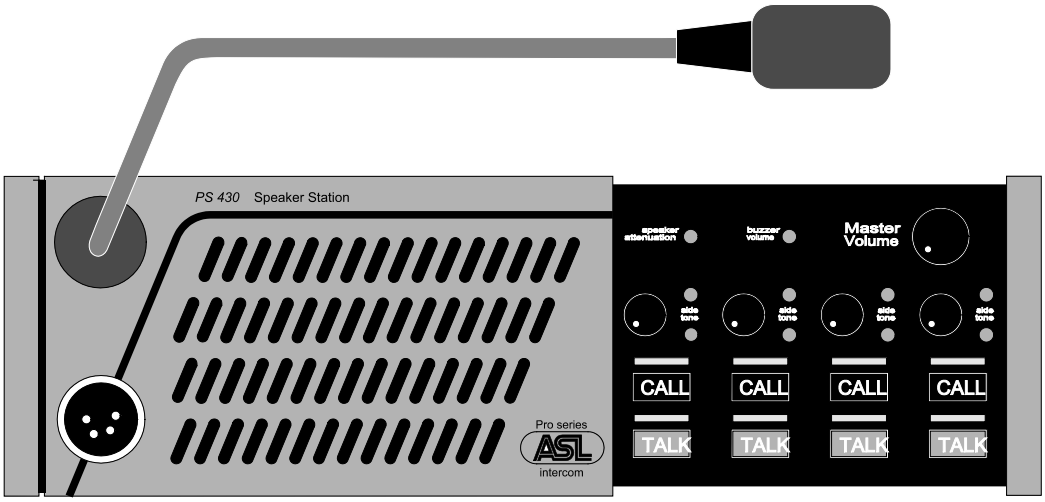
PS 430
FOUR CHANNEL
REMOTE SPEAKER STATION



USER MANUAL

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1.0 GENERAL DESCRIPTION

The PS 430 is a four channel speaker station designed for use in an ASL intercom system and provides full duplex communications.
It incorporates a loudspeaker, a gooseneck microphone and a headset connector.

The PS 430 RM model has a small built-in electret mic instead of a gooseneck mic.

Each channel has a Volume (listen level) control, a Talk and Call button with LED indicators and a two-stage side tone trimmer.
A master volume controls the total speaker/headset volume.

The unit is equipped with a limiter for the gooseneck microphone, allowing the user to speak close into the microphone without giving rise to overload and distortion. Loudspeaker dimming is automatic if the gooseneck microphone is active.

The XLR-4 headset connector allows connecting a headset or telephone handset.

If a headset is connected, both gooseneck microphone and speaker are disabled automatically.

Special attention has been paid to the intelligibility of speech. By applying low noise/high speed op-amps, a speech presence filter and a specially developed high power bridged headphone amplifier, communication is very comfortable even in environments with high background noise level.

The unique ASL CALL system provides both a flashing red LED and a very distinctive sound signal. Only a slight touch of the CALL button makes the red LED flash, whilst holding the button for two seconds will activate the CALL sound signal. The volume of the sound signal (buzzer) can be adjusted at the front panel.

Fully electronic switching allows for 'soft' microphone ON switching (latched or momentary), remote Mic Mute facility and automatic speaker attenuation.

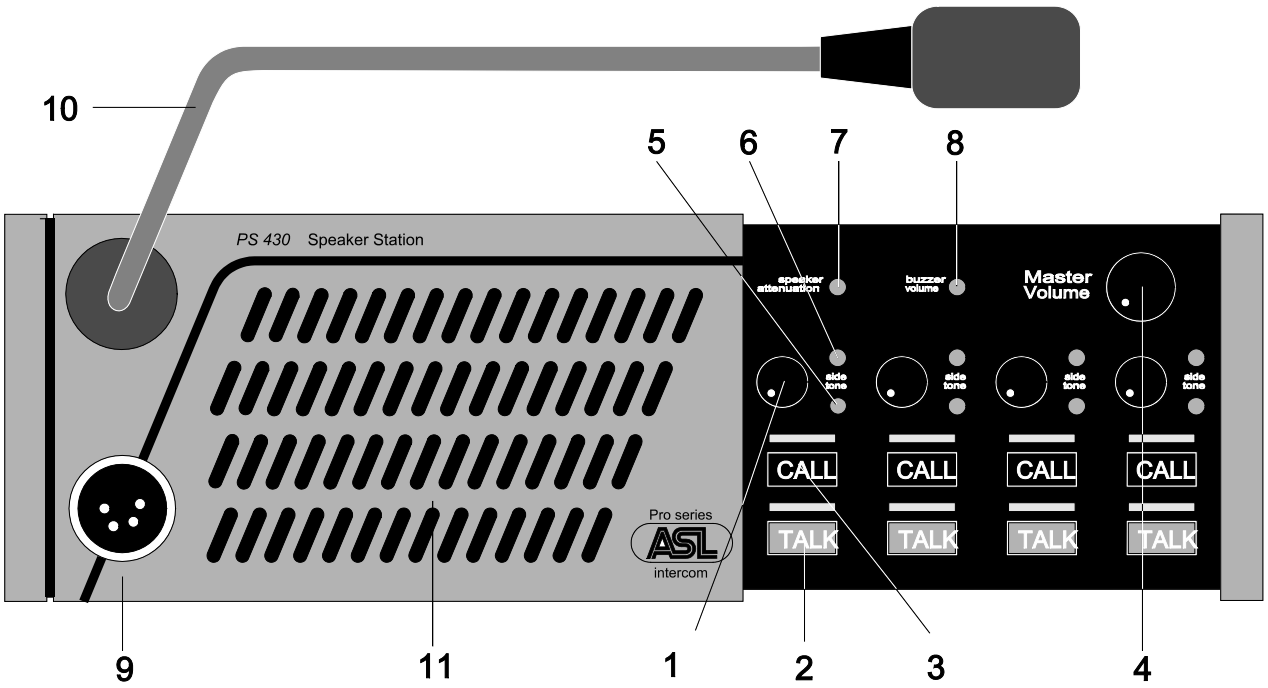
2.0 INSTALLATION

To connect the PS 430 to the intercom system, use professional flexible microphone cable with 2 wires and 1 shield only. These cables may be connected to the LINE connector sockets on the PS 430 side panel, using the Y-cords which are in the shipping carton.

The PS 430 is fully protected against wiring mistakes (reverse power) or short circuit in the interconnect cables.

A special kit is available for mounting the PS 430 in a 19" rack, taking 2U of rack space

3.0 FRONT PANEL CONTROLS & CONNECTOR



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1 LISTEN LEVEL control knobs
To preset the listen level for each channel separately (see also #4).

2 TALK buttons
Allow talking to each channel separately or to several channels simultaneously. If a TALK button is switched on, its large green LED is lit.

Momentary switching:
If a TALK button is pushed and held, the microphone signal is sent to the referring intercom channel until the button is released.

Latched switching:
If a TALK button is pushed shortly, it is electronically latched and the microphone signal is sent to the referring intercom channel. If pushed again, the TALK button switches off.

Mic Mute when latched on:
After on an intercom channel a so-called Mic Mute signal has been received from a PRO Series master station or power supply, the connection between microphone and that intercom channel is interrupted. By pushing the TALK button, that connection is restored again.

3 CALL buttons
To activate the call system, for each channel separately. By a momentary push a call signal is sent to all stations connected to the referring intercom channel and all Call LEDs start flashing. Pushing and holding the CALL button for 2 seconds activates the call buzzer, provided there is no buzzer mute signal on the referring channel. After the CALL button is released the LEDs continue to flash for a further 2 seconds.

4 MASTER VOLUME knob
Functions as the master volume control of the listen levels of the 4 intercom channels (see also #1), for both the speaker and the headset.

5 SIDE TONE LEVEL trimmers
These trimmers (one for each channel) are to minimize the speaker feeding back into the gooseneck microphone (unit feedback); They also determine the level of your own voice as you hear it in the speaker or headset.

6 SIDE TONE HI trimmers
These trimmers have the same purpose as trimmers #5, but solely for the high frequencies.

Trimmer #5 and #6 adjustment procedure,
for each channel separately:

- set trimmers in start position: fully clockwise
- switch off the microphones of all connected (speaker-) stations
- make sure that there is no automatic speaker attenuation (turn trimmer #7 fully clockwise)
- push the TALK button of the channel of which one wants to adjust the side tone.
- Slowly turn up the listen volume of the PS 430 (channel- and master volume).
- speak into the gooseneck microphone
- adjust the speaker listen level to a minimum by turning the side tone trimmers counter-clockwise (first trimmer #5 and then trimmer #6; repeat this a few times)
- connect a headset to the PS 430 (the speaker and gooseneck are now automatically disabled) and speak into the headset microphone
- check whether the level of your voice in the headset can(s) is sufficient. If not, push up this level a bit by turning side tone trimmer #5 clockwise.

The trimmer operating area is between fully clockwise and minimum level. Adjusting the side tones does not affect the level of your voice as it is heard by other stations.

7 SPEAKER ATTENUATOR trimmer
To adjust the extent to which the loudspeaker is automatically dimmed if the gooseneck mic is switched on. It prevents unit feedback if side tone rejection is not sufficient.

It also minimizes system feedback or a 'hollow' sound when the gooseneck microphones of other speaker stations (on one or several of the connected party lines) are switched on as well.

Adjustment procedure :

- make sure that there is no headset connected
- switch off all TALK buttons of the PS 430.
- inject an audio signal on one of the intercom channels via the aux input of a Pro Series master station or separate power supply
- turn up the listen volume of the PS 430 (channel – and master volume).
- activate the gooseneck microphone (push the TALK button of the selected channel)
- adjust the desired degree of speaker attenuation (turning the trimmer counter-clockwise increases the attenuation)

8 BUZZER VOLUME trimmer

This trimmer adjusts the volume of the buzzer, which is located behind the front panel. The buzzer is activated if the CALL button of the PS 430 (or a CALL button of any other station on the party lines to which the PS 430 is connected) is pushed for longer than 2 seconds, provided there is no Buzzer Mute Signal on these party lines coming from a Pro Series master station or separate power supply.

9 HEADSET connector

This is an XLR-4 connector for the connection of a local headset if private conversation is desired. The headset must have a can impedance of minimum 200 ohms. In case the headset has two cans in parallel, each can must have an impedance of minimum 400 ohms.
The headset microphone may be of the dynamic or electret type

Pin assignments headset connector :
Pin 1. Shield Mic. (GND)
Pin 2. mic. +
Pin 3. phones +
Pin 4.. phones -

If a headset is connected, loudspeaker and gooseneck microphone are disabled automatically.

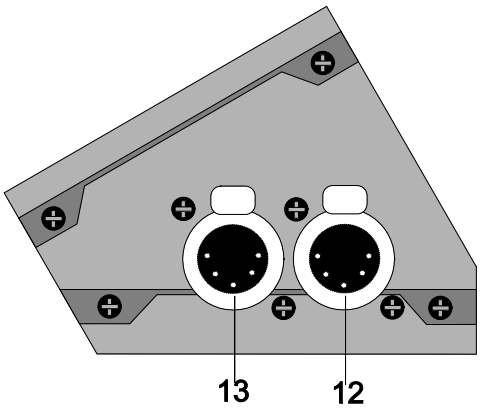
10 GOOSENECK microphone

This a noise canceling microphone. A limiter prevents the mic pre-amp from clipping when speaking close in the microphone. The gooseneck mic. is automatically disabled if a headset is connected to the PS 430.

11 LOUDSPEAKER

This is a high quality 16 Ω loudspeaker. The speaker is automatically disabled if a headset is connected to the PS 430.

4.0 SIDE PANEL CONNECTORS



12 LINE connector for channel A & B
13 LINE connector for channel C & D

These two XLR-5 connectors are for connecting the PS 430 to the intercom system party lines. One connector is for channels A and B, one connector for channel C and D.

For linking the XLR-5 sockets to XLR-3 intercom line connectors, each PS 430 comes with two Y-cords, having an XLR-5 connector at one end and two XLR-3 connectors at the other end. On the Y-cords, the XLR-3 with the white ring corresponds with channel A or C.

Pin assignment XLR-5 connector #12

1.	0 V / ground shield	A+B
2.	+30 V power wire channel	A
3.	audio wire channel	A
4.	+30 V audio wire channel	B
5.	audio wire channel	B

Pin assignment XLR-5 connector #13

1.	0 V / ground shield	C+D
2.	+30 V power wire channel	C
3.	audio wire channel	C
4.	+30 V audio wire channel	D
5.	audio wire channel	D

5.0 INTERNAL CONTROLS

MIC GAIN trimmers

Inside the unit there are two trimmers to adjust the mic gain of the gooseneck microphone and the headset microphone separately.
They are located on a PC board.

They can be reached as follows :
- remove the screws of the bottom plate
- slide the plate to one side and take it out
- take away the plastic isolation plate

The trimmers are labeled ‘GOOSE’ for the gooseneck microphone and ‘HEADS’ for the headset microphone

6.0 TECHNICAL SPECIFICATIONS PS 430

System
dynamic range: 80 dB
frequency response: 200 Hz - 13 kHz (-3 dB)
call send signal: +2.8 mA
call signal threshold (receive): +2.4 V DC
operation voltage: 24 - 30 V DC
power interrupt time (mic mute): 0.1 sec

Intercom Line
Impedance: 350 Ω (1kHz), 2.2 kΩ (DC)
audio level: nom. -18 dBu, max. 0 dBu

Mic. Pre-amps
gain: 40 - 60 dB (adjustable internally)
presence filter: +6 dB at 5 kHz
power to electret mic: +9 V DC

Side Tone
Rejection: 0 - 30dB adjustable

Buzzer
max. SPL: 85 dBA

Speaker Driver Amp
1.6 W rms @ 16 Ω

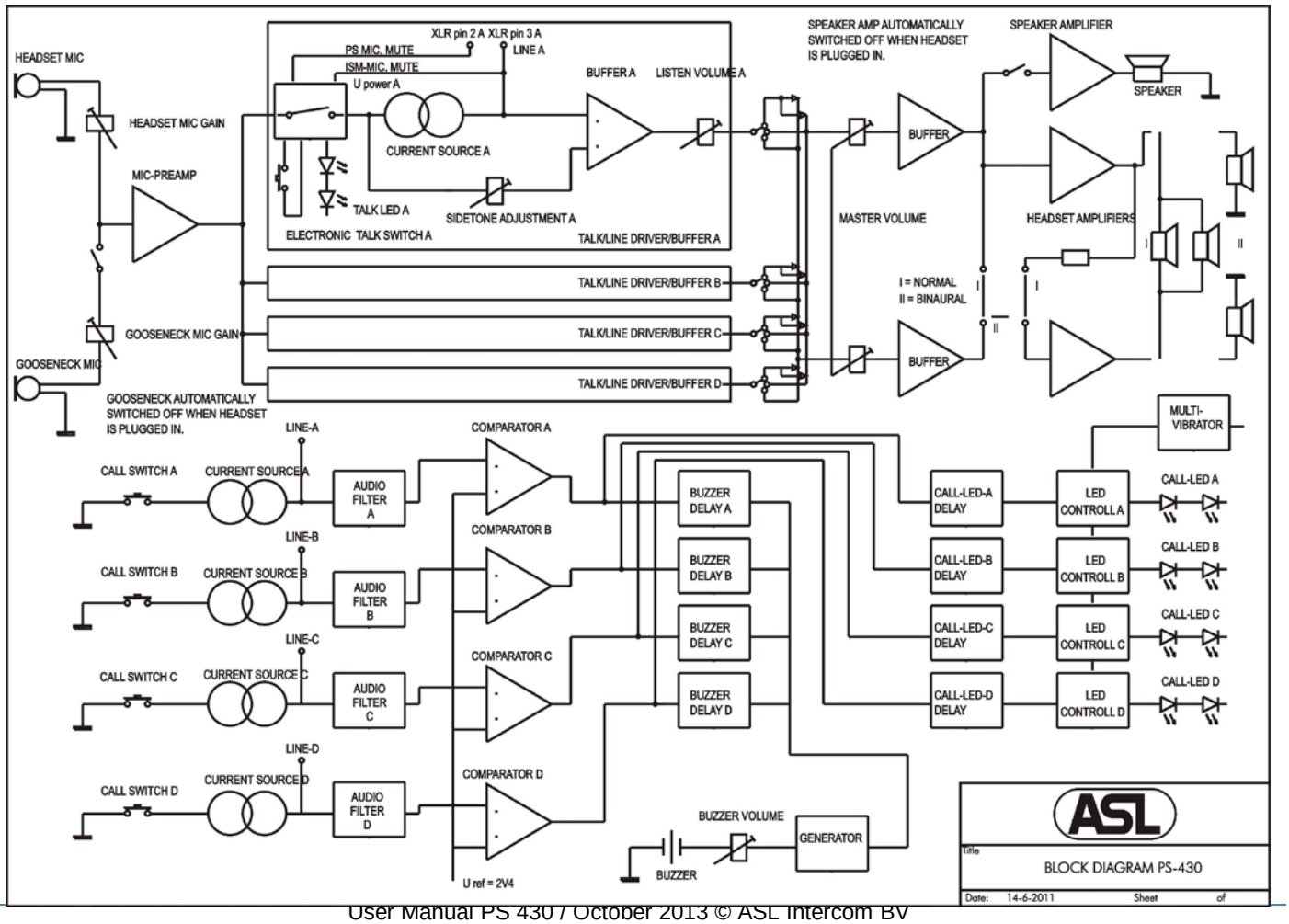
Headphones Driver Amps
max. output level:
monaural: 16 V rms @ 200 Ω
binaural: 2x 10.3 V rms @ 400 Ω
max. output power:
monaural: 1.3 W rms @ 200 Ω
binaural: 2x 0.27 W rms @ 400 Ω

Power Consumption PS 430
current (at 30 V DC):
70 mA quiescent
105 mA signaling
230 mA at max. output + signaling

Dimensions & Weight PS 430
width: 283mm / height: 88 mm
depth: 42/48 mm sloping / weight: 1550 grams

0 dBu is defined as 775 mV into open circuit
ASL reserves the right to alter specifications without prior notice

7.0 BLOCK DIAGRAM PS 430



8.0 PARTY LINE, TECHNICAL CONCEPT

User stations in an ASL intercom system are connected via one or several 'party lines'.
A party line offers two way ('full duplex') communication and consists of standard microphone (multi-pair) cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return.
Current drive is used for signal transfer.
Each station utilizes a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to the headphones or loudspeakers.

This principle has three advantages:

- the use of a single audio line allows several stations to talk and listen simultaneously
- due to the high bridging impedance offered by each station, the number of stations on the party line has no influence on the level of the communications signal
- power and audio to the intercom stations use the same cable

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal.

9.0 CABLING

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The intercom lines (the 'party lines') are of the shielded two-conductor microphone cable type. The intercom line connectors are of the XLR-3 type. Audio and Call signals are on pin 3, DC power is on pin 2 and pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

The audio signal is transferred in an unbalanced way (see 'Party Line, Technical Concept').
To avoid earth loops (hum), the possible effect of electromagnetic fields and to minimize power loss, certain rules have to be obeyed when installing the cabling of an intercom system :

Use high quality cable
Use high quality microphone cable (shielded two conductor cable, minimum 2x 0.30 mm2).
In case multi-pair microphone cable is used, there should be an overall shield and each pair should consist of two conductors (minimum 2x 0.15 mm2) with separate shield.

Use flexible cable
Use flexible single and multi-pair microphone cable instead of cable with solid cores, especially if the cable is subjected to bending during operation or installation.

Cable screens to XLR pin 1
The screen of each separate microphone cable and/or the screen of each single pair in a multi-pair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect these screens to the metal housing of ASL unitst or XLR-3 wall boxes.
See section 'Earthing Concept'.

Connect metal cable trunks, wall boxes and overall multi-pair cable screens to clean earth
Metal cable trunks, metal wall boxes and overall multi-pair cable screens should be interconnected and, at the 'central earth point' in the intercom network only, be connected to a clean earth or a safety earth.
(see section 'Earthing Concept').

Keep metal connection boxes and cable trunks or pipes isolated from other metal parts
Metal trunks or pipes for intercom cables and metal connection boxes should be mounted in such a way that they are isolated from any other metal housing or construction part.

Keep cables parallel as much as possible
When two (multi channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. If using multi-pair cable, parallelism is ensured in the best possible way.

Avoid closed loops
Always avoid that intercom cables are making a closed loop. So-called 'ring intercom' should not physically be cabled as a ring..

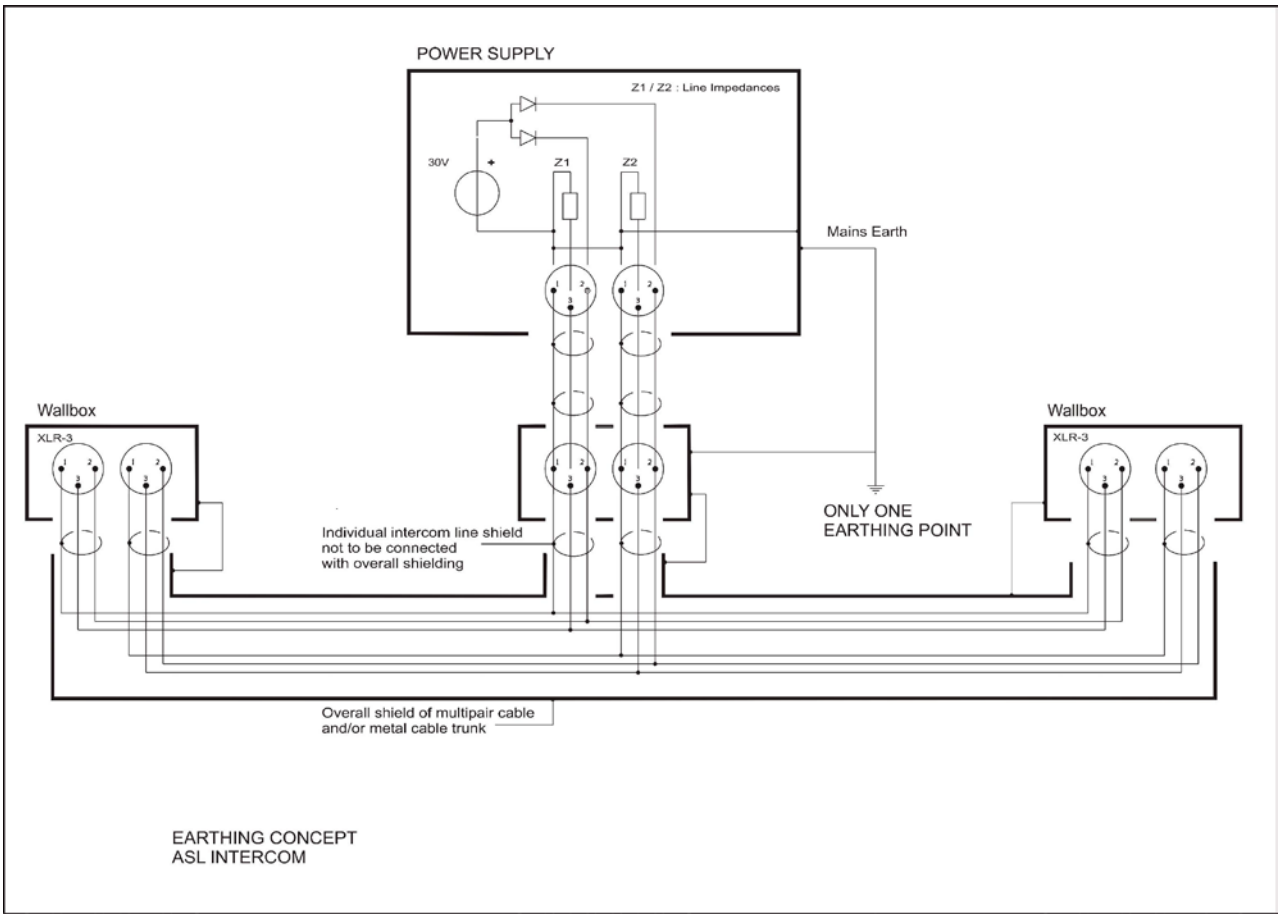
Keep cables away from electromagnetic sources
Keep intercom cables away from high energy cables, e.g. 115/230/400V mains power or dimmer controlled feeds for spotlights. Intercom cables should cross high energy cables at an angle of 90º only. Intercom cables should never be in the same trunks as energy cables.

Place power supply in a central position
In case of a system powered by a separate power supply: In order to diminish power losses, place the power supply as close as possible to where most power consumption occurs, in other words most user stations are placed.

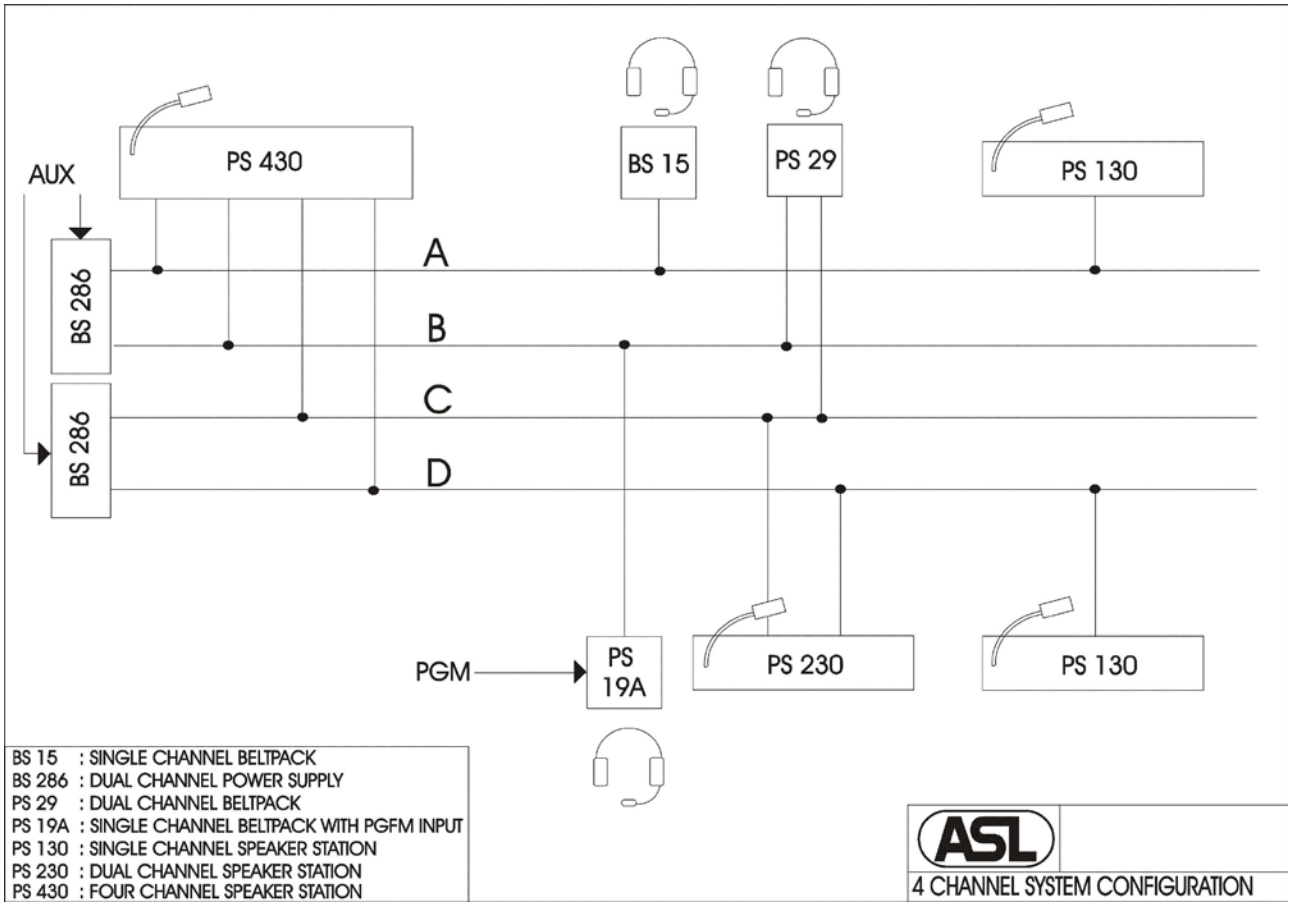
ASL powered units to a 'clean' mains outlet
Master stations or power supplies should be connected

to a mains outlet with a clean earth.
Other audio equipment may be connected to this mains outlet, but avoid using an outlet which also powers dimmer controlled lighting systems.

10.0 EARTHING CONCEPT



11.0 SYSTEM CONFIGURATION



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